



Qazvin University of Medical Sciences
Faculty of Health

A Thesis
Presented for the degree of Master of sciences (M.Sc.) in
Health Sciences in Nutrition

Title:

Effects of probiotic and alpha-lipoic acid
supplements, separately or in combination on the
maintenance of weigh in overweight individuals on
isocaloric weight loss diet

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Abstract

Background and aim: Excess weight is a consequence of the imbalance of energy intake and energy expenditure, which is associated with inflammation and dysbiosis. Probiotics can affect host behavior, appetite, and weight change by modifying the gut microbiome. Alpha-lipoic acid (ALA) with antioxidant properties is involved in weight control activities in adipose tissue. This study was performed to determine the effect of probiotic and ALA supplements, separately or in combination on the maintenance of weight in overweight individuals on isocaloric weight loss diet.

Materials and methods: In this double-blinded, randomized, placebo controlled clinical trial, 88 overweight individuals were randomly divided into four groups. Isocaloric diet with probiotic supplement (500 mg) group, isocaloric diet with ALA (600 mg) group, isocaloric diet with probiotic and ALA supplements group and isocaloric diet with placebo group. This study had two stages of weight loss (8 weeks) and weight maintenance (16 weeks). In the first phase, participants received an isocaloric diet with the mentioned supplements. In the second phase, individuals intaked a normal diet with the mentioned supplements. At the beginning of the study and at the end of the first and second stages, weight, body mass index (BMI), waist circumference (WC), hip circumference (HC), body fat percentage, systolic and diastolic blood pressure, C-reactive protein (CRP) and appetite of participants were measured. Data were analyzed using Software SPSS version 20.

Paired t-test was used to compare the intra-group changes and ANOVA test was used to compare the mean changes between the groups.

Result: At the end of the first phase, in all intervention groups, weight, BMI, WC, HC, body fat percentage, systolic blood pressure, diastolic blood pressure, and CRP were significantly reduced ($P < 0.05$). However, in the isocaloric diet with placebo group, only changes in weight, BMI, and WC were significant ($P < 0.05$). At the end of the first phase, participants' appetite compared to the baseline of the study was significantly reduced in the three intervention groups in terms of feeling hungry, feeling full, desire for food, and desire to eat sweet food ($P < 0.04$). The desire to eat fatty foods was decreased significantly in the probiotic and probiotic + ALA groups ($P < 0.04$). The desire to eat salty foods was decreased significantly only in the probiotic + ALA group ($P < 0.05$). At the end of the second phase, compared to the end of the first phase of the study, the appetite components in the lipoic and probiotic groups were significantly reduced ($P < 0.05$). At the end of the

second phase of the study, weight loss only in the probiotic+ALA group was significantly reduced ($P < 0.05$). On the other hand, the average weight in the placebo group compared to the end of the first stage, in addition to not being able to maintain the reduced weight, but also the changes in the average weight of this group increased. Changes in physical activity in participants at the end of the first and second stages were not significant.

Conclusion: According to the findings, taking probiotic and ALA supplements with an isocaloric diet can help to lose weight and maintain a "reduced" weight during and after weight loss. This may be due to an imbalance in the gut microbiota due to reduced inflammation and sweeping of the ROS, as well as the synergistic effect of the supplements.

Keywords: Probiotic, Alpha Lipoic Acid, Maintenance of Weight, Overweight, Isocaloric diet.